

APPENDIX O

EXISTING FACILITIES EVALUATION DOCUMENTATION

- Table O-1 Summary of NR 140 Groundwater Quality Exceedances (2015-2017)
- GRL 2017 Annual Report
- GRL 2016 Annual Report
- GRL 2015 Annual Report
- GRL 2015 AR Addendum

Table O-1 Summary of NR 140 Groundwater Quality exceedances (2015-2017)



Table O-1
Summary of NR 140 Groundwater Quality Exceedances (2015-2017)
Glacier Ridge Landfill - South/Southeast Vertical Expansion
Feasibility Report
Horicon, Wisconsin

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Benzene	µg/L	0.5	5	-	MW-403	10/7/2016	1.2/1.4	PAL	Y
						10/9/2015	1.3/1.4	PAL	Y
					P-403A	10/7/2016	1.3	PAL	Y
						4/6/2016	1.0	PAL	Y
						4/16/2015	1.6	PAL	Y
					P-406B	10/4/2017	1.3	PAL	Y
						4/6/2017	1.2	PAL	Y
						10/5/2016	1.3	PAL	Y
						4/8/2016	1.2	PAL	Y
						10/7/2015	1.1	PAL	Y
						4/16/2015	1.2	PAL	Y
						10/6/2016	1.1	PAL	Y
Chloride, dissolved	mg/l as Cl	125	250	620	MW-1AR	10/5/2017	526/507	ES	N
						4/6/2017	551	ES	N
						10/5/2016	559	ES	N
						4/6/2016	513	ES	N
						10/8/2015	360	ES	N
						4/16/2015	456	ES	N
				210	MW-301	10/4/2017	266	ES	N
						4/3/2017	238	ACL	N
						10/4/2016	261	ES	N
						4/4/2016	263	ES	N
						10/5/2015	307	ES	N
						4/14/2015	353	ES	N

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Chloride, dissolved (cont.)				940	MW-304	10/4/2017	998	ES (ACL)	N
						4/4/2017	996	ES (ACL)	N
						10/6/2015	1130	ES (ACL)	N
				-	MW-403	4/6/2017	284	ES	Y
						10/7/2016	367/370	ES	Y
						4/6/2016	320	ES	Y
				140	P-306A	10/3/2017	205	ACL	Y
						4/4/2017	238	ACL	Y
						10/4/2016	228	ACL	Y
						4/5/2016	198	ACL	Y
						10/5/2015	176	ACL	Y
						4/14/2015	159	ACL	Y
						10/4/2017	151	PAL	Y
Chloride, total	mg/l as Cl	125	250	-	GCL-1	4/4/2017	161	PAL	Y
						10/6/2016	174	PAL	Y
						4/5/2016	156	PAL	Y
						10/7/2015	169	PAL	Y
						4/15/2015	143	PAL	Y
					UDL-1	10/15/2017	135	PAL	Y
						4/6/2017	184	PAL	Y
						10/6/2016	172	PAL	Y
						4/7/2016	228	PAL	Y
						10/8/2015	206	PAL	Y
cis-1,2-Dichloroethene	µg/L	7	70	-	MW-1AR	10/5/2017	1030	ES	N
						4/6/2017	1140	ES	N
						10/5/2016	1050	ES	N
						4/6/2016	1240	ES	N
						10/8/2015	808	ES	N
						4/16/2015	1450	ES	N
					MW-1RR	4/16/2015	14.4	PAL	N
					MW-403	10/5/2017	12.6	PAL	Y

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
					MW-407	4/6/2017	21.1	PAL	Y
						10/7/2016	17.5/19.2	PAL	Y
						4/6/2016	13.0	PAL	Y
						10/7/2015	53.9	PAL	Y
						4/16/2015	78.5	ES	Y
					UDL-1	10/6/2016	12.9	PAL	Y
						4/7/2016	22.2	PAL	Y
						10/8/2015	236	ES	Y
Tetrahydrofuran	µg/L	50	10	-	MW-1AR	10/5/2016	68.3	ES	N
					W-9RR	4/16/2015	53.8	ES	N
						10/5/2017	34.7	PAL	Y
					UDL-1	10/6/2015	40.3	PAL	Y
						10/8/2015	10.8	PAL	Y
Trichloroethylene	µg/L	5	0.5	-	MW-403	4/6/2017	1.6	PAL	Y
					MW-407	10/7/2016	1.5/1.4	PAL	Y
						4/6/2016	1.2	PAL	Y
						10/7/2015	13.2	ES	Y
						4/16/2015	12.5	ES	Y
						10/8/2015	1.7	PAL	Y
Vinyl Chloride	µg/L	0.2	0.02	-	MW-1AR	10/5/2017	1480	ES	N
					MW-1RR	4/6/2017	1540	ES	N
						10/5/2016	1980	ES	N
						4/6/2016	1960	ES	N
						10/8/2015	1050	ES	N
						4/16/2015	1190	ES	N
						10/5/2017	2.5	ES	N
						4/6/2017	5.2	ES	N
						10/5/2016	24	ES	N
						4/6/2016	11.6	ES	N
						10/7/2015	18.3	ES	N

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Vinyl Chloride (cont.)					MW-403	4/16/2015	56.6	ES	N
						10/5/2017	16.9	ES	Y
						4/6/2017	13.4	ES	Y
						10/7/2016	5.7/6.6	ES	Y
					MW-406	4/6/2016	1.8	ES	Y
						4/6/2017	1.2	ES	Y
						4/8/2016	2.3	ES	Y
					P-403A	4/6/2016	1.9	ES	Y
						10/9/2015	1.2	ES	Y
						4/16/2015	2.3	ES	Y
					P-406A	10/4/2017	4.0	ES	Y
						4/6/2017	1.2	ES	Y
						10/5/2016	2.7	ES	Y
						10/7/2015	3.2	ES	Y
					P-406B	4/16/2015	5.8/5.0	ES	Y
						4/6/2017	1.3	ES	Y
						10/5/2016	2.5	ES	Y
						4/8/2016	2.5	ES	Y
					UDL-1	10/7/2015	2.2	ES	Y
						4/16/2015	3.5	ES	Y
						10/5/2017	3.2	ES	Y
						4/6/2017	2.4	ES	Y
						10/6/2016	8.6	ES	Y
						4/7/2016	14.1	ES	Y
						10/8/2015	94.9	ES	Y
Alkalinity, total filtered	mg/l as CaCO3	830	-	-	MW-1RR	10/5/2017	1120	PAL (I)	N
						4/6/2017	831	PAL (I)	N
						4/6/2016	980	PAL (I)	N
						10/7/2015	1110	PAL (I)	N
		470	-	-	MW-301	10/4/2017	764	PAL (I)	N
						4/3/2017	831	PAL (I)	N
						10/4/2016	644	PAL (I)	N

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Alkalinity, total filtered (cont.)		870	-	-	MW-403	4/4/2016	679	PAL (I)	N
						10/5/2015	532	PAL (I)	N
						4/14/2015	635	PAL (I)	N
						10/5/2017	1170	PAL (I)	Y
						4/6/2017	937	PAL (I)	Y
						10/7/2016	956/964	PAL (I)	Y
		640	-	-	MW-406	10/5/2016	669	PAL (I)	Y
						10/6/2015	645	PAL (I)	Y
		560	-	-	P-406A	4/6/2017	749	PAL (I)	Y
						4/8/2016	627	PAL (I)	Y
		500	-	-	W-155	10/4/2017	588	PAL (I)	Y
						4/4/2017	620	PAL (I)	Y
		440	-	-	W-158	10/4/2017	571	PAL (I)	Y
						4/4/2017	514	PAL (I)	Y
						10/4/2016	493	PAL (I)	Y
						4/5/2016	517	PAL (I)	Y
						10/6/2015	594	PAL (I)	Y
						4/15/2015	534/486	PAL (I)	Y
		500	-	-	W-159	10/5/2017	500	PAL (I)	Y
						10/7/2016	799	PAL (I)	Y
		740	-	-	W-161R	10/4/2016	929	PAL (I)	Y
		430	-	-	W-165	10/5/2017	759	PAL (I)	N
						4/5/2017	489	PAL (I)	N
						10/5/2016	1010	PAL (I)	N
						4/6/2016	572	PAL (I)	N
						10/6/2015	1370	PAL (I)	N
						4/15/2015	1320	PAL (I)	N
		390	-	-	W-166	4/4/2017	413	PAL (I)	Y
						4/5/2016	438	PAL (I)	Y

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140	NR 140	ACL	Well	Date	Result	Exceedance	Within
		PAL	ES						DMZ
Hardness, total filtered	mg/l as CaCO	790	-	-	MW-1RR	10/5/2017	907	PAL (I)	N
						4/6/2017	857	PAL (I)	N
						10/7/2015	857	PAL (I)	N
		670	-	-	MW-301	10/4/2017	1210	PAL (I)	N
						4/3/2017	1150	PAL (I)	N
						10/4/2016	984	PAL (I)	N
						4/4/2016	1080	PAL (I)	N
						10/5/2015	1060	PAL (I)	N
						4/14/2015	1300	PAL (I)	N
		840	-	-	MW-304	4/4/2017	905	PAL (I)	N
						10/6/2015	890	PAL (I)	N
		630	-	-	MW-309	10/3/2017	898	PAL (I)	Y
						4/4/2017	767	PAL (I)	Y
						10/5/2016	804/810	PAL (I)	Y
						4/15/2015	725	PAL (I)	Y
		830	-	-	MW-403	10/5/2017	1330	PAL (I)	Y
						4/6/2017	1460	PAL (I)	Y
						10/7/2016	1720/1780	PAL (I)	Y
						4/6/2016	1490	PAL (I)	Y
						10/9/2015	838/852	PAL (I)	Y
						4/16/2015	850	PAL (I)	Y
		590	-	-	MW-406	10/4/2017	653/616	PAL (I)	Y
						10/5/2016	692	PAL (I)	Y
						4/16/2015	591	PAL (I)	Y
		530	-	-	P-306A	10/3/2017	533	PAL (I)	Y
						4/4/2017	559	PAL (I)	Y
						10/4/2016	535	PAL (I)	Y
						4/5/2016	533	PAL (I)	Y
		570	-	-	P-406A	4/6/2017	646	PAL (I)	Y

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Hardness, total filtered (cont.)		480	-	-	W-155	4/8/2016	628	PAL (I)	Y
						10/4/2017	667	PAL (I)	Y
						4/4/2017	782	PAL (I)	Y
						4/5/2016	649	PAL (I)	Y
		500	-	-	W-158	10/6/2015	708	PAL (I)	Y
						10/4/2017	532	PAL (I)	Y
						4/4/2017	512	PAL (I)	Y
						10/4/2016	543	PAL (I)	Y
						10/6/2015	626	PAL (I)	Y
						4/15/2015	538/546	PAL (I)	Y
		640	-	-	W-159	10/5/2017	648	PAL (I)	Y
		640	-	-	W-161R	10/4/2017	735	PAL (I)	Y
		360	-	-	W-163A	4/17/2015	380	PAL (I)	N
		460	-	-	W-165	10/5/2017	959	PAL (I)	N
						4/5/2017	541	PAL (I)	N
						10/5/2016	1270	PAL (I)	N
						4/6/2016	746	PAL (I)	N
						10/6/2015	1300	PAL (I)	N
						4/15/2015	1260	PAL (I)	N
		400	-	-	W-166	4/4/2017	419	PAL (I)	Y
Specific Conductance, field	umhos/cm@ 25C	1700	-	-	MW-1RR	10/5/2017	1846	PAL (I)	N
						4/6/2016	1721	PAL (I)	N
						4/16/2015	1764	PAL (I)	N
		1600	-	-	MW-301	10/4/2017	2130	PAL (I)	N
						4/3/2017	2107	PAL (I)	N
						10/4/2016	1909	PAL (I)	N
						4/4/2016	1800	PAL (I)	N
						10/5/2015	2550	PAL (I)	N

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Specific Conductance, field (cont.)						4/14/2015	2450	PAL (I)	N
		1900	-	-	MW-403	10/5/2017	2230	PAL (I)	Y
						4/6/2017	2920	PAL (I)	Y
						10/7/2016	2370	PAL (I)	Y
						4/6/2016	1993	PAL (I)	Y
		1200	-	-	MW-406	4/6/2017	1235	PAL (I)	Y
						4/16/2015	1201	PAL (I)	Y
		1100	-	-	P-306A	4/4/2017	1157	PAL (I)	Y
						10/5/2015	1121	PAL (I)	Y
		1100	-	-	W-153A	10/5/2016	1226	PAL (I)	Y
		1500	-	-	W-154	10/5/2016	1681	PAL (I)	Y
		840	-	-	W-155	10/4/2017	1085	PAL (I)	Y
						4/4/2017	1265	PAL (I)	Y
						4/5/2016	1280	PAL (I)	Y
						10/6/2015	1340	PAL (I)	Y
		800	-	-	W-158	10/4/2017	850	PAL (I)	Y
						4/4/2017	898	PAL (I)	Y
						10/4/2016	981	PAL (I)	Y
						4/5/2016	988	PAL (I)	Y
						10/6/2015	948	PAL (I)	Y
						4/15/2015	924	PAL (I)	Y
		720	-	-	W-159A	10/5/2017	954	PAL (I)	Y
						10/4/2016	824	PAL (I)	Y
						4/5/2016	764	PAL (I)	Y
						10/6/2015	758	PAL (I)	Y
		1100	-	-	W-161R	4/4/2017	1111	PAL (I)	Y
						10/4/2016	1243	PAL (I)	Y
		760	-	-	W-163A	10/5/2017	1561	PAL (I)	N
		820	-	-	W-165	10/5/2017	1290	PAL (I)	N

Table O-1
Summary of NR 140 Groundwater Quality Exceedences (2015-2017)

Parameter	Unit	NR 140 PAL	NR 140 ES	ACL	Well	Date	Result	Exceedance	Within DMZ
Specific Conductance, field (cont.)		740	-	-	W-166	4/5/2017	980	PAL (I)	N
						10/5/2016	1370	PAL (I)	N
						4/6/2016	1130	PAL (I)	N
						10/6/2015	1830	PAL (I)	N
						4/15/2015	1748	PAL (I)	N
						4/4/2017	746	PAL (I)	Y

- Notes:
- 1) DMZ = Design Management Zone
 - 2) ES = Enforcement Standard
 - 3) PAL = Preventative Action Limit
 - 4) NR 140 PAL only applies to wells with DMZ
 - 5) PAL (I) = Preventative Action Limit for Indicator Parameters, as established in the 2013 Plan of Operation for the Southeast Expansion.
 - 6) ACL = Alternative Concentration Limit, as established in the 2013 Plan of Operation for the Southeast Expansion.
 - 7) Two results indicate duplicate sample collected and analyzed.

Prepared by: TD
Checked by: CR/JO

GRL 2017 Annual Report

2017 Annual Report

**Advanced Disposal Services
Glacier Ridge Landfill
WDNR License No. 03068
Dodge County, Wisconsin**

**Prepared For:
Advanced Disposal Services
Glacier Ridge Landfill
N7296 Highway V
Horicon, WI 53032**

**Prepared By:
Environmental Sampling Corporation
P.O. Box 12
Muskego, WI 53150**

April 2018



April 30, 2018

Ms. Ann Bekta
Wisconsin Dept. of Natural Resources
South Central Region
2514 Morse Street
Janesville, WI 53545-0249

RE: 2017 Annual Report
Advanced Disposal Service Glacier Ridge Landfill, Lic. #3068
Dodge County, Wisconsin

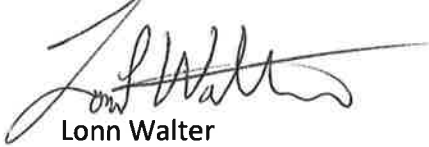
Dear Ms. Bekta:

Pursuant to condition No. 42, 43 and 44 of the Wisconsin Department of Natural Resources (WDNR) Southeast Expansion Plan of Operation and Hazardous Waste Remediation Variance approval dated October 13, 2013, for Advanced Disposal Services Glacier Ridge Landfill (#3068), we are pleased to provide the Department with one copy of the 2017 Annual Report. An electronic copy of the report was also provided to you via e-mail. This report also includes the annual reporting requirements for the site bio-pile operation (License No. 3792), Leachate Recirculation and RD&D Plan, and the Waste Stability Plan. Per the WDNR Southeast Expansion Plan of Operation and Hazardous Waste Remediation Variance approval, the annual report submittal date is April 30th of each year.

This annual report follow the format used for the 2016 Annual Report submittal. The report presents applicable site approval conditions followed by responses that present the requested information and data. We believe this method provides for accurate tracking of reporting requirements from year to year.

The 2017 Annual Compliance Certification was submitted to the WDNR on February 28, 2018 and is provided with this letter as **Attachment 1**. If you have any questions regarding this report, please contact Lonn Walters of Advanced Disposal Service Glacier Ridge Landfill at (920) 387-0606. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Lonnie Walter", with a long horizontal flourish extending to the right.

Lonnie Walter
General Manager

Attachment

cc: Adam Hogan, WDNR Fitchburg
Tim Curry, ADS-Midwest (electronic copy)
Kari Rabideau, ADS-Midwest (electronic copy)
ADS-GRL File
John St. Peter, ADS-GRL Standing Committee
Mary Dessereau, ADS-GRL Standing Committee
Don Hilgendorff, ADS-GRL Standing Committee (electronic copy)
Tyler Field, Cornerstone Environmental Group (electronic copy)
Sherren Clark, SCS Engineers (electronic copy)
Frank Perugini, ESC (electronic copy)

Attachment 1

**2017 Annual Compliance Certification
February 28, 2018**



February 28, 2018

Mr. Nick Tasche
Wisconsin Department of Natural Resources
South Central Region
3911 Fish Hatchery Road
Fitchburg, WI 53711-5397

Subject: Landfill Compliance Certification
Advanced Disposal Services Glacier Ridge Landfill, LLC
WDNR License Number 03068
Town of Williamstown
Dodge County, Wisconsin

Dear Mr. Tasche:

With regards to the Advanced Disposal Services Glacier Ridge Landfill, LLC and in accordance with NR 506.19 (1), I hereby certify that I am aware of all approved plans for the landfill, all department conditions of approval, and all applicable solid waste statutory and administrative rules, and that to the best of my knowledge, information and belief, the landfill is in substantial compliance with all approved plans and requirements.

If you have any questions, please contact me at (920) 387-0607.

Sincerely,

ADVANCED DISPOSAL SERVICES GLACIER RIDGE LANDFILL, LLC

Jacob A. Margelofsky
Operations Manager

cc: Cynthia Moore, WDNR Central Office, Madison
Ann Bekta, WDNR South Central Region, Janesville
Doris Thiele, WDNR South Central Region, Horicon
Kari Rabideau, Advanced Disposal Services

2017 ANNUAL REPORT

**ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL, LICENSE #03068
DODGE COUNTY, WISCONSIN**

**2017 ANNUAL REPORT
ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL
LICENSE #03068
DODGE COUNTY, WISCONSIN**

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Figure 2: Site Monitoring Plan
Figure 3: Current Waste Filling and Covering System Development
Figure 4: Final Cover Settlement Aerial Survey

Appendices

Appendix A Waste Volume and Type

- Table A-1: Sludge to MSW Mixing Ratios
- Attachment A-1: Special Waste/ADC Volumes and Generators List
Attachment A-2: 2017 License Renewal Application
Attachment A-3: Shredder Fluff Analytical Data

Appendices (cont.)

Appendix B Landfill Gas Data

Attachment B-1:	Downtime Report
Attachment B-2:	Maintenance Log
Attachment B-3:	Gas Extraction Report
Attachment B-4:	Gas Well Liquid Levels
Attachment B-5:	Gas Volume Summary
Attachment B-6:	Gas Probe Monitoring Report
Attachment B-7:	Gas Condensate Historic Analytical Data Summary
Attachment B-8:	Gas Blower Laboratory Analytical Report

Appendix C Surface Water, Groundwater, and Lysimeter Data

Table C-1:	Lysimeter Volumes
Table C-2:	Gradient Control and Underdrain Volumes
Attachment C-1:	Groundwater Monitoring Results (SCS Engineers)
Attachment C-2:	Lysimeter Historic Analytical Data Summary
Attachment C-3:	Gradient Control and Underdrain Historic Analytical Data Summary
Attachment C-4:	Staff Gauge Monitoring Data

Appendix D Leachate Data

Attachment D-1:	SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D
Attachment D-2:	Line Jetting Report
Attachment D-3:	Rectifier Monitoring Sheet
Attachment D-4:	SCS Engineers Technical Memorandum: Organic Stability Plan Report

Appendices (cont.)

Appendix E Site Inspection Summaries

Attachment E-1:	Cover Integrity Inspections
Attachment E-2:	Litter Control Tracking
Attachment E-3:	Annual Compliance (Stormwater) Inspection
Attachment E-4:	Quarterly Stormwater Inspection Reports

Appendix F Biopile Processing Facility

Attachment F-1:	Contaminated Soils/Bio-Remediation
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**2017 ANNUAL REPORT
ADVANCED DISPOSAL SERVICES
GLACIER RIDGE LANDFILL
LICENSE #03068
DODGE COUNTY, WISCONSIN**

1.0 INTRODUCTION

Advanced Disposal Services Glacier Ridge Landfill, LLC (ADS-GRL) operates a municipal solid waste disposal facility in the SE ¼ of the NW ¼, of Section 35, T12N, R16E in the Town of Williamstown, Dodge County, Wisconsin. This annual report addresses the 2017 annual reporting requirements for ADS-GRL (License No. 3068).

ADS-GRL is providing to the WDNR this annual report discussing site operations and the results of the environmental monitoring program as required by Conditions 42, 43 and 45 of the October 13, 2013 Plan of Operation Approval. These conditions supersede all the annual reporting requirements contained in previous approvals except for the annual reporting requirements in the Department's May 4, 2007 Research Development and Demonstration Plan of Operation approval modification.

2.0 ANNUAL REPORT REQUIREMENTS

The following are provided in response to Conditions 42, 43 and 44 of the Wisconsin Department of Natural Resources Plan of Operations Approval letter dated October 13, 2013. The approval conditions and responses are subdivided into the following categories: General, Waste Volumes and Types, Gas Extraction System, Groundwater and Gradient Control, Leachate Collection and Recirculation System, and Drainage and Cap Maintenance. The WDNR Conditions are listed in bold and italics and ADS's response is provided in plain text following each condition.

Condition 42: Veolia shall submit an annual report to the Department no later than April 30th of each year that summarizes the following activities from the previous calendar year:

Advanced Disposal Services Glacier Ridge Landfill is providing this annual report to the Department to satisfy this condition.

2.1 GENERAL

42 (a) Provide full size topographic map or plan view drawings to show the site and surrounding areas one-quarter mile in all directions. On the map show property boundary, any structures, private water supply wells, and property owner's name.

A full size topographic map entitled "Property Boundaries, Structures, and Private Wells" is provided as **Figure 1**.

42 (b) Provide a color coded site map showing all landfill phases marked, all wells including the abandoned wells numbered and labeled, the entire leachate collection and transfer piping system, gas system (including all buried components), and gas monitoring probes.

A color-coded site map entitled "Site Monitoring Plan" is provided as **Figure 2**.

42 (c) *Provide a color coded site map showing all landfill phases marked, areas covered with final cover, areas covered with intermediate cover, and areas actively being filled.*

A color-coded site map titled “Current Waste Filling and Cover System Development” is provided as **Figure 3**. The information listed below is provided on the Figure.

- Phase delineation
- Areas that have received intermediate cover
- Areas where waste placement was conducted in 2017
- Areas that have achieved approved final grades and final cover has been placed
- Areas of the landfill yet to be developed

42 (d) *Provide aerial survey for purpose of settlement calculation of the final cover. At a minimum, vertical datum (MSL) and horizontal datum based on the Wisconsin state plan coordinate system will be provided for all gas extraction well locations.*

An aerial survey entitled “Final Cover Settlement Aerial Survey” is provided as **Figure 4**. Location information (i.e. northing and easting) for each gas extraction well location is provided as Table 1 inset on **Figure 4**.

SCS reviewed annual flyover survey data obtained in 2016 and 2017 for potential areas of abnormal settlement or shifting waste that may be related to leachate recirculation or additional liquids disposal. No leachate recirculation has occurred in final cover Areas 1, 2, and 3 of the closed North Hill; therefore, they were not analyzed. Areas analyzed included final cover Areas 4 and 5 and the 2015 Final Cover area of the South Expansion. Analysis of the closed North Hill area indicated 0.5 ft. or less settlement between 2016 and 2017. Analysis in the South Expansion area indicated 2.0 ft. or less settlement, except for one area indicating 3.9 ft. of settlement between 2016 and 2017. No settlements were observed as abnormal or unexpected.

2.2 WASTE VOLUMES AND TYPES

42 (e) *Total volume and tonnage of special wastes, and tabulation by waste category for each of the waste types in the special waste plan which were accepted for the disposal the previous calendar year.*

The total volume of special waste received in 2017 was 192,912 CU yds. or 182,457 tons. A table summarizing the special waste received by waste category for the calendar year is included in **Appendix A, Attachment A-1**.

42 (f) *Computation of the total volume of all wastes disposed at this facility, and the proportions of special wastes compared to the total volume of landfill filled.*

The total volume of waste received in 2017 was 927,493 CU Yds. or 624,599 tons. A table summarizing the total volume of all-waste types received for the calendar years is included in the License Renewal Application provided as **Appendix A, Attachment A-2**. The ratio of all-waste types to special waste received in 2017 was approximately 4.8 to 1.

$$\frac{\text{All-Waste Types}}{\text{Special Waste}} = \frac{927,493 \text{ CU yds}}{192,912 \text{ CU yds}} = 4.8 \text{ to } 1$$

42 (g) *The use of alternate daily cover material. The report shall contain at a minimum the following:*

i. Identification of the waste generator or hauler of the alternate daily cover material accepted for disposal.

A table summarizing the waste generators or haulers of the alternative daily cover material is included in **Appendix A, Attachment A-1**.

ii. Quantity of material used as alternative daily cover (in units of cubic yards and tons).

Quantities of shredder fluff, foundry waste, contaminated soils, and sludge used for alternate daily cover (ADC) in 2017 are listed in the table below.

2017 Quantities of Alternative Daily Cover Materials			
Material	Tons ⁽¹⁾	Cubic Yards ⁽²⁾ (Compacted in place)	Density ⁽³⁾ (lbs/cy)
Shredder Fluff	8,145	8,145	2,000
Foundry Waste	2,533	2,533	2,000
Contaminated Soil	9,062	6,041	3,000
Sludge	47,450	43,136	2,200
Totals:	67,190	59,855	--
Notes: ⁽¹⁾ Tonnages were obtained from the Special Waste Tonnage by Category provided as Appendix A, Attachment A-1. ⁽²⁾ In place compacted cubic yards are calculated based on weighed scale receipts (tonnage column above) and estimated in place compacted densities (density column above). ⁽³⁾ The density used for shredder fluff is that specified for compacted in place industrial waste. The same density specified for in field compacted foundry waste was used for contaminated soil.			

All the shredder fluff listed in the above table was utilized for ADC. The shredder fluff analytical data is provided as **Appendix A, Attachment A-3**.

iii. Estimated density of the daily cover materials.

See Density in above table under sub paragraph 42(g)ii.

iv. Coverage ratio.

During 2017, 59,855 cubic yards of ADC was used for daily coverage. The ratio of waste to ADC was 14.5 to 1. This calculation is provided below in response to condition 42(g)(vi) regarding the ratio of waste to ADC by volume.

v. Alternative beneficial use applications such as dikes, berms or other structures in the landfill.

All shredder fluff received (8,145 tons) and a portion of the foundry waste received (2,533 tons) was utilized for ADC. A portion of the sludge materials received (47,450 tons) for beneficial reuse during 2017 was used as ADC. A portion of the petroleum contaminated soil (C-soil) accepted in 2017, but not tracked separately from ADC, had combined DRO/GRO concentrations less than 250 mg/kg and was utilized as beneficial

reuse upon receipt. The remainder of the C-soil received during 2017 was either incorporated into the active bio-pile or stockpiled for the next bio pile.

vi. The ratio of waste to alternative daily cover by volume for the year.

During 2017, the facility received a total of 927,493 CU yds of total waste. ADC materials made up 59,855 CU yds of the total waste. The total waste received at the facility, less ADC materials, was 867,638 CU yds. The ratio of waste to alternative daily cover by volume for 2017 is provided below.

$$\text{Waste to ADC Ratio} = \frac{\text{Total Waste (less ADC)}}{\text{ADC}} = \frac{867,638 \text{ CU yds}}{59,855 \text{ CU yds}} = 14.5 : 1$$

vii. Discussion of problems encountered and recommendations.

No problems were encountered using any of the ADC materials in 2017.

WI Administrative Code Requirement

NR 506.14: Non-free liquid solid wastes

(2)(e) An annual report is submitted which documents the daily mixing ratios of each sludge waste to municipal solid waste on both a weight and volume basis and any operational problems.

The facility accepted 109,529 tons of sludge material during 2017. Mixing ratios for sludge to municipal solid waste were calculated by weight and volume and are provided as **Appendix A, Table A-1**. There were no operational problems encountered during the reporting period.

2.3 GAS EXTRACTION SYSTEM

42 (h) Records of periods of shutdown of the gas extraction system, length of time of shutdown, and corrective action for the system or individual extraction wells.

A summary of the periods of shutdown of the gas extraction system and the length of time of each shutdown is provided in the Downtime Report (**Appendix B, Attachment B-1**). The downtimes resulted in a total of 81.19 hours in 2017. Effective responses to

rectify system shutdowns resulted in a 99.1% system operational status throughout 2017.

Corrective actions required for the gas extraction system or individual extraction wells were documented on the Maintenance Log provided as **Appendix B, Attachment B-2**. Monthly monitoring data for the individual gas extraction wells is included on the Gas Extraction Reports provided as **Appendix B, Attachment B-3**. Exceedances of the operating conditions at the individual gas extraction wells are noted on the gas extraction report. All exceedances were corrected within the timeframe specified by the Air Pollution Control permit. As such, there were no deviations of the operating conditions pertaining to wellfield monitoring during the current reporting period.

42 (i) *Any maintenance, cleaning, repair, or replacement of extraction wells, header or lateral lines, blower or gas combustion equipment components, or valve assemblies.*

Maintenance performed on gas extraction system components in 2017 is summarized on the Maintenance Log provided as **Appendix B, Attachment B-2**. In addition to these maintenance items, the blower fan and motor bearings are greased bi-weekly as part of routine blower maintenance.

There were six new vertical gas extraction wells (GE-169, GE-170, GE-171, GE-172, GE-147, and GE-175) and one new supplemental gas extraction point (2BE-HGW1) installed in February and March 2017 in accordance with the Expedited Plan Modification Approval for Supplemental Gas Extraction Wells, dated December 6, 2016 and the Master Gas Plan. The supplemental gas extraction point is a horizontal gas well installed to assist with odor control and gas extraction. Also during the reporting period, the landfill gas collection system was expanded as part of the 2017 Gas Collection and Control System (GCCS) Improvement project. The project was primarily conducted between August 7 and December 26, 2017 and included the following gas extraction system expansions and improvements.

- Installed three new Continental Model 77.05 blower,
- Tied-in new condensate drain lines,
- Modified the existing knockout and piping by replacing 12-inch pipe with 24-inch pipe,
- Installed new Endress+Hauser flow meters,
- Installed a new blower control room,
- Installed an emergency stop shutoff outside of the control room, and
- Installed new programming and components for the new blower system upgrade.

Details and further information regarding the gas system improvements will be provided in the 2017 GCCS Improvement Project Documentation Report, prepared by CQM on behalf of ADS-GRL. This report will be submitted to the Department in 2018. Wellfield installations and system improvements were also summarized in the Air Pollution Control permit Semi-Annual Data Reports.

42 (j) *An assessment of the performance of the gas extraction system, including liquid levels in the gas extraction wells, the quality and quantity of gas and gas condensate produced from the facility, and the removal of volatile organic compounds and other substances in the gas and gas condensate. Also, include a summary of gas wells experiencing high leachate head levels and any corrective actions taken.*

Gas Extraction System Performance: The ADS-GRL gas extraction system operated for 99.1% of 2017. System downtimes were documented on the Downtime Report provided as **Appendix B, Attachment B-1**. ADS-GRL personnel were effective in rectifying system shutdowns to keep downtime at a minimum.

Liquid Levels in the Gas Extraction Wells: ADS-GRL personnel conducted the annual liquid level measurements at all gas extraction wells in June 2017. Monitoring data for the gas extraction wells indicate that less than 50% of the screen was submerged at each location. No additional monitoring was required. A summary of the gas well liquid levels recorded in June 2017 is provided as **Appendix B, Attachment B-4**.

Gas well liquid level monitoring conducted in December 2017 is provided in SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**). This monitoring was conducted beyond the scope of the permit as an internal monitoring request. All liquid levels indicated less than 50% of the screen was submerged at each location during the December 2017 monitoring event. No additional action was required.

Gas Quality and Gas Quantity: Gas quality readings (percent methane (CH₄), carbon dioxide (CO₂), oxygen (O₂), balance gas, temperature, flow rate and vacuum) are recorded monthly (at a minimum) at the blower. Inlet blower readings indicate the average CH₄ concentration was 51.4% and the average O₂ concentration was 1.4% by volume. No significant changes in gas quality were observed in 2017. Gas blower readings are provided in the Gas Extraction Report (**Appendix B, Attachment B-3**).

A total of 1,156,403,104 cubic feet of landfill gas was collected during 2017. The Gas Volume summary provided as **Appendix B, Attachment B-5** includes the average monthly gas flow, flare temperature, and volumes of gas managed.

ADS-GRL staff monitored %CH₄, CO₂, O₂, balance gas, temperature (°F), flow rate (cfm) and vacuum (inches H₂O) at all gas extraction wells on a monthly basis. The Gas Extraction Report is provided as **Appendix B, Attachment B-3**.

Quarterly gas probe monitoring readings were recorded by ADS-GRL staff in January, April, July, and October. No methane was detected during the quarterly gas probe monitoring events. Gas probe monitoring data is provided as **Appendix B, Attachment B-6**.

Gas Condensate Quantity: An accurate estimate of gas condensate collected at the condensate lift station and condensate knockout K.O.#2 can be made based on the pump run time hour meter (provided by ADS-GRL personnel) and the flow rate of the pump (approximately 12 gpm provided by pump manufacturer). The estimated volume of gas condensate generated in 2017 is 422,208 gallons.

Condensate Quality/VOCs removed: Landfill gas condensate is sampled and analyzed semi-annually in April and October for field parameters, inorganic parameters and VOCs. The April and October 2017 analytical data is summarized in **Appendix B, Attachment B-7**. Gas condensate analytical results are consistent with historical data and show no apparent trends. The gas blower is sampled annually for VOCs by method TO-15 and sulfur compounds by method ASTM D-5504; the laboratory analytical data is provided as **Appendix B, Attachment B-8**.

2.4 GROUNDWATER AND GRADIENT CONTROL

42 (k) An assessment of the groundwater and surface water flow patterns and quality trends.

An assessment of the groundwater and surface water quality have been compiled as part of the semi-annual Groundwater Monitoring Results reports prepared and submitted by SCS (**Appendix C, Attachment C-1**). A summary of the groundwater and surface water flow patterns and quality is provided below.

Groundwater Monitoring Wells

Semi-annual sampling of monitoring points takes place in April and October. Annual sampling is conducted in October. Forty-three non-Subtitle D monitoring wells are monitored semi-annually for indicator parameters. Thirty-four of these wells are sampled annually in October for volatile organic compounds (VOCs) while the remaining nine are sampled semi-annually for VOCs. Six additional Subtitle D wells are sampled semi-annually in for indicator parameters and VOCs. Seven additional groundwater monitoring wells and seven horizontal wells are monitored semi-annually for water level only. Quality control samples were collected during the semi-annual events in accordance with ESC and WDNR procedures. In addition, water elevation, specific

conductance, pH, temperature, color, odor and turbidity are measured in the field at each monitoring point during sampling.

Ten private water supply wells are monitored annually in October for indicator parameters, metals and VOCs. Supplemental private well monitoring was also conducted at one private well in February and April 2017 to provide additional information regarding the October 2016 monitoring results.

Groundwater and private well monitoring was conducted by Environmental Sampling Corporation (ESC). Samples were analyzed by Pace Analytical Services of Green Bay, Wisconsin (Wisconsin Laboratory Certification No. 999407970). Laboratory analytical data for the April and October 2017 events was submitted in electronic format to the Department with the Groundwater Monitoring Results submission prepared and submitted by SCS Engineers (**Appendix C, Attachment C-1**).

The April and October 2017 laboratory analytical data was compared to Wis. Adm. Code NR140 Preventive Action Limits (PAL) and Enforcement Standards (ES) for Public Health and Public Welfare. Analytical data was also compared to the well-specific PALs for Groundwater Indicator Parameters.

Exceedances of NR140 Standards and well-specific Indicator Parameters are summarized in the tables provided below.

NR 140 Standard or ACL Exceedances						
Well	Chloride	Benzene	cis-1,2-Dichloro-ethene	Tetra-hydro-furan	Trichloro-ethylene	Vinyl Chloride
MW-1AR			Apr/Oct (ES)			Apr/Oct (ES)
MW-1RR						Apr/Oct (ES)
W-9RR				Oct (PAL)		
MW-301	Apr/Oct (ACL)					
MW-304	Apr (ACL)					
MW-403	Apr (ES)/ Oct (PAL)		Apr/Oct (PAL)		Apr (PAL)	Apr/Oct (ES)
MW-406						Apr (ES)
P-306A	Apr/Oct (ACL)					
P-406A						Apr/Oct (ES)
P-406B		Apr/Oct (PAL)				Apr (ES)

Indicator Parameter Exceedances			
Well	Alkalinity	Hardness	Spec.Cond
MW-1RR	Apr/Oct	Apr/Oct	Apr/Oct
MW-301	Apr/Oct	Apr/Oct	Apr/Oct
MW-304		Apr	
MW-306		Oct	
MW-309		Apr/Oct	
MW-403	Apr/Oct	Apr/Oct	Apr/Oct
MW-406		Oct	Apr
P-306A		Apr/Oct	Apr
P-406A	Apr	Apr	
W-155	Apr/Oct	Apr/Oct	Apr/Oct
W-158	Apr/Oct	Apr/Oct	Apr/Oct
W-159	Oct	Oct	
W-159A			Oct
W-161R		Oct	Apr
W-163A			Oct
W-165	Apr/Oct	Apr/Oct	Apr/Oct
W-166	Apr	Apr	Apr

The NR140 public welfare parameter exceedances for chloride are attributed to road salt or calcium chloride used for dust control. NR141 exceedances for VOCs are typically associated with the former Land and Gas Reclamation Landfill (LGRL). Indicator parameter exceedances for samples collected from wells installed to monitor the southern expansion and the closed northern GRL may be due to earthmoving activities, the groundwater control trench operation, other groundwater flow changes, changes in surface water runoff and or wetland restoration activities. The indicator parameter exceedances for samples collected from wells located near the former LGRL are likely due to LGRL. Additional information pertaining to groundwater quality at the facility is provided in the Groundwater Monitoring Results submissions included in **Appendix C, Attachment C-1**.

Groundwater flow across the facility is generally to the north and northeast although local groundwater flow patterns vary slightly immediate around the facility.

Lysimeters

The facility has seven lysimeters (LS-1 through LS-7) that are monitored monthly for liquid level and discharge volume pumped, semi-annually for indicator parameters, chloride, sulfate, COD, sodium and total kjeldahl nitrogen, and annually in October for VOCs. The lysimeter monthly liquid levels and discharge volumes are provided as

Appendix C, Table C-1. Laboratory analytical results are provided in **Appendix C, Attachment C-2**. The lysimeters are not subject to NR140 Standards; however, laboratory results are reviewed for changes in water quality. The 2017 data was generally consistent with historic data.

Laboratory analytical data for the April and October 2017 events was submitted in electronic format to the Department with the Groundwater Monitoring Results submission prepared and submitted by SCS Engineers (**Appendix C, Attachment C-1**).

Gradient Control System

The gradient control system consists of semi-annual water level monitoring at one headwell (GCM-1) and one underdrain monitoring point (UDM-1) and semi-annual sample collection at one gradient control point (GCL-1) and two underdrain monitoring points (UDL-1 and UDG-1). Samples collected from GCL-1 were analyzed semi-annually for field parameters and concentrations of chloride, hardness, and alkalinity. Samples collected from UDL-1 were analyzed semi-annually for field parameters and concentrations of chloride, hardness, alkalinity, and VOCs. There was no flow to UDG-1 during the semi-annual monitoring events conducted in 2017. No samples were collected.

Laboratory analytical data for the April and October 2017 events was submitted in electronic format to the Department with the Groundwater Monitoring Results submission prepared and submitted by SCS Engineers (**Appendix C, Attachment C-3**).

The April and October 2017 laboratory analytical data was compared to Wis. Adm. Code NR140 Preventive Action Limits (PAL) and Enforcement Standards (ES) for Public Health and Public Welfare. Exceedances of NR140 Standards are summarized below.

NR 140 Standard Exceedances		
Well	Chloride	Vinyl Chloride
GCL-1	Apr/Oct (PAL)	
UDL-1	Apr/Oct (PAL)	Apr/Oct (ES)

Additional gradient control system monitoring is conducted in accordance with the facility's WPDES permits. Samples are collected from Outfall 1 semi-annually for TSS analysis in accordance with the WPDES general permit for pit/trench dewatering. There were no exceedances of the discharge limits at Outfall 1 during 2017. The WPDES 2017 Annual Discharge Monitoring Report was provided to WDNR on January 9, 2018.

Monitoring was also conducted in accordance with the WPDES general permit for discharge of contaminated groundwater from remedial action. During 2017, samples were collected from Outfall 1 (GW Control Trench) semi-annually. No samples were

collected from Outfalls 2, 3, or 4 because these outfalls were not in use; all flow was directed to Outfall 1 (GW Control Trench). The samples collected from Outfall 1 (GW Control Trench) were analyzed for TSS, pH, and VOCs specified in the WPDES permit. There were no exceedances of the discharge limits during the reporting period. Monitoring results were provided to the WDNR in the WPDES semi-annual monitoring reports dated July 14, 2017 and January 9, 2018.

Surface Water

Fifteen staff gauge elevations are measured semi-annually. A summary of the staff gauge monitoring data is provided as **Appendix C, Attachment C-4**. During 2017, staff gauge SW-8, SW-9, and SW-12 were damaged. Surface water elevations were obtained with a GPS unit. Surface water points SW-19, SW-20, and SW-22 were dry during both the April and October monitoring events. Surface water points SW-11, SW-24, SW-25, and SW-26 were dry during the October monitoring event.

Surface water flow is transmitted via site ditches and directed to the five sedimentation basins which discharge to wetlands surrounding the site. The sedimentation basins are monitored in accordance with WPDES Tier 2 permit requirements. All surface water drainage structures on the landfill and landfill perimeter including the sedimentation ponds and water discharges are in good condition and are inspected weekly for proper operation.

42 (l) *An assessment of the condition and operation of the gradient control system.*

The volume pumped from the gradient control monitoring point (GCL-1) and underdrain monitoring point (UDL-1) are recorded as monthly totals and reported semi-annually. Volumes pumped from GCL-1 and UDL-1 during 2017 are provided as **Appendix C, Table C-2**. These points are also sampled for indicator parameters semi-annually in April and October. UDL-1 is also monitored for VOCs semi-annually. A summary of the laboratory analytical data for these monitoring points is provided as **Appendix C, Attachment C-3**. Based on the monitoring observations throughout 2017, the gradient control system is in good condition and functioning properly.

2.5 LEACHATE COLLECTION AND RECIRCULATION SYSTEM

42 (m) *Tabulation of volumes of leachate, leachate heads, and chemical quality data for the leachate.*

Leachate volumes, leachate head levels, and a summary of the leachate quality for 2017 are included in the SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**).

In general, the leachate results for 2017 are similar to previous data. Leachate concentrations are acceptable for disposal.

42 (n) A summary of warning symptoms, terminations and resumptions of leachate recirculation after termination.

There were no warning symptoms or failure thresholds observed in 2017 during leachate recirculation. Additional information regarding leachate recirculation is provided in the SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**).

42 (o) A discussion of any operating problems and resolutions during the year.

In December 2016, the liquid application rate on several days exceeded the leachate recirculation plan limit due to the limited area available for liquid disposal. Although the rate was exceeded on individual days, the average daily rate for the month was below the plan limit. No operational problems were associated with application of liquids during this period. In 2017, the facility reduced the volume of liquids accepted. Additional information is provided in the SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**).

There was one small seep noted in the active area of the South Expansion near gas extraction well GE-122. This small seep was noted during the monthly cover inspection on July 31, 2017 and was repaired on the same day that it was observed. Any other areas of concern in the active portion of the facility were addressed with additional soils or French drains as they were identified to allow proper drainage.

42 (p) Documentation drawings or diagrams showing the installed details of the leachate distribution system added or revised since the previous annual report, including piping, pumps, and distribution media.

There were no new leachate collection lines, vaults, or other leachate distribution system components installations in 2017.

42 (q) Results of the liquid mass balance measurements for each leachate drainage basin.

42 (r) Leachate head levels for each leachate drainage basin.

42 (s) Graphs showing volumes of leachate extracted and recirculated and precipitation received for each drainage basin.

42 (t) Graphs over time period since leachate recirculation was initiated, for each parameter analyzed for the leachate as part of the monitoring plan.

The information required by Approval Conditions 42(q) – 42(t) is included in the SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**).

42 (u) Documentation of cleaning efforts and observations for leachate and gradient control collection pipes, and records of integrity of the secondary containment features of the leachate extraction, conveyance, and storage system.

The annual leachate line cleanout and gradient control collection pipe cleaning was performed by Superior Jetting of Zimmerman, MN from October 30 through November 7, 2017. Line jetting documentation is provided as **Appendix D, Attachment D-2**. The leachate collection lines and gradient control collection pipes were successfully cleaned with overlapping lengths from each direction or the entire length was jetting from one direction. The gradient cleanouts GCO-1E/W through GCO-3E/W could not be accessed for jetting due to soft ground conditions. Site personnel plan to modify the jetting scheduled for 2018 in attempt to improve accessibility.

The underground leachate storage tank had no performance problems in 2017. Monthly readings of the current rectifier system for the underground leachate storage tank impressed-current corrosion protection system are provided in **Appendix D, Attachment D-3**. The rectifier readings provided (voltage and amperage) are meant to provide the operator an indication that the system is operational from month to month. Visual observations of the manholes along the alignment of the leachate discharge line from the Phase V Module 1 sideslope leachate riser to the leachate tank are made routinely.

2.6 DRAINAGE AND CAP MAINTENANCE

42 (v) Any evidence of differential settlement or impeded drainage, downslope soil slips or movements, exposed geomembrane or subsurface drain materials, integrity of surface swales, and other drainage features, any evidence of water ponding or formation of depressions, and cover condition in the surface water diversion berms and final cover spillways.

SCS reviewed annual flyover survey data obtained in 2016 and 2017 for potential areas of abnormal settlement or shifting waste that may be related to leachate recirculation or additional liquids disposal. An assessment of the settlement monitoring was provided in the SCS Engineers Technical Memorandum: Annual Reporting for Leachate Recirculation and RD&D (**Appendix D, Attachment D-1**)

Inspections of the cap for settlement issues listed above were conducted monthly by ADS-GRL personnel in 2017. Cover Integrity Inspection forms are provided as **Appendix E, Attachment E-1**. During 2017, there were areas of erosion noted on the inspection forms and noted areas in which seeding was needed. There was also one small seep noted in an active area of the facility. Areas of erosion and the small seep were repaired, typically on the same day as the inspection. There was no differential settlement or impeded drainage, no downslope soil slips or movements, no exposed geomembrane or subsurface drain material, and no water ponding or formation of depressions observed in 2017.

Surface water drainage ways, diversion berms and final cover spillways were in good condition and functioning properly during the reporting period. Let down structures were checked during the monthly cover integrity inspections. The energy dissipaters were cleaned as needed and rip rap was installed on the south end of the 2015 Final Cover Area to minimize erosion in spring 2017.

42 (w) An assessment of the vegetative cover vigor and diversity, evidence of animal intrusion, soil slumping or exposure of the capping layer.

Inspections of the cap for the above-mentioned issues were conducted monthly during 2017 by ADS-GRL personnel. The final cover is in very good condition with no evidence of stressed vegetation, no soil slumping, no animal intrusion or exposure of the capping layer observed. The site was mowed in 2017 to control weeds and to allow access to the gas extraction wells.

42 (x) A description of all repairs made to the cap and vegetative cover, protective structures, monitoring devices, and sedimentation ponds, etc.

The landfill cap and vegetative cover was inspected by ADS-GRL personnel monthly in 2017. Minor repairs were conducted as needed and documented in the Cover Integrity Inspection reports provided as **Appendix E, Attachment E-1**. Repairs made to the gas system monitoring devices were documented on the Maintenance Log provided as **Appendix B, Attachment B-2**.

42 (y) The actions used to minimize wind blown debris. The report shall contain at a minimum the following information:

i. Dates when wind speed was greater than or equal to 30 mph at the working face.

Wind speeds greater than 30 mph at the facility were tracked and documented on the Litter Control Tracking forms provided as **Appendix E, Attachment E-2**. If wind speeds affected the active working area, wind screens were adjusted accordingly, and the working area was moved to an area of the facility with minimal wind impact.

ii. Dates when the landfill was shut down due to wind.

The landfill was not shut down due to wind during 2017. When high winds were anticipated, the site would begin to prepare the working face early by placing windscreens and fencing to try and minimize wind-blown material off the active area. During hours of operation the open working face was kept to a minimal size to contain the number and size of loads that could be unloaded into the area at one time. The site also minimized waste acceptance and certain materials during times of high winds. Dates in which the active area was relocated to an area with minimal wind impact are documented on the wind tracking summary provided as **Appendix E, Attachment E-2**.

iii. Dates when staff collected debris off-site.

ADS-GRL's site maintenance staff is responsible for managing windblown material. ADS-GRL utilizes contracted labor to assist with windblown material on an as-needed basis. A total of 2,856 hours of manpower was used in 2017 to collect windblown debris. ADS-GRL maintains records of these instances on site.

This condition supersedes all annual report requirements contained in previous approvals except for the annual reporting requirements in the Department's May 4, 2007 Research, Development and Demonstration plan of operation approval modification.

The annual reporting requirements for the Leachate Recirculation and RD&D Plan 2017 are provided with this report in the Technical Memorandum prepared by SCS Engineers (**Appendix D, Attachment D-1**). Also included in this annual report is the SCS Engineers Technical Memorandum: Organic Stability Plan Report (**Appendix D, Attachment D-4**).

Condition 43: In addition to the storm water related provisions of the plan of operation and the storm water inspection requirements of this approval, the following activities shall be performed at the landfill to demonstrate compliance with ch. NR 216, Wis. Adm. Code, regarding storm water management at the landfill facility. Results shall be included in the annual report.

43 (a) Conduct and document an annual facility site compliance inspection adequate to verify that the site drainage conditions and potential pollution sources identified in the plan of operation remain accurate, and that the best management practices prescribed in the plan of operation are being implemented, properly operate, and adequately maintained.

An annual inspection was conducted by the site personnel during 2017. The annual inspection form is provided as **Appendix E, Attachment E-3**.

43 (b) Conduct and document quarterly visual inspections of storm water discharge quality at each outfall. The inspections shall be conducted within 30 minutes after runoff begins discharging from the outfall or as soon as practical but, no later than 60 minutes after the beginning of discharge. The inspections shall include observations of color, odor, turbidity, suspended solids, foam, oil sheen or other readily observable indicators of storm water pollution. Documentation of the inspections shall include the inspection date, inspection personnel, visual quality of the storm water discharge, and probable sources of any storm water contamination.

Quarterly stormwater inspections are conducted by site personnel during 2017. Quarterly Facility SWPPP inspection forms are completed to document the visual observations. The quarterly inspection reports are provided as **Appendix E, Attachment E-4**.

Condition 44: Advanced Disposal shall include, as part of the landfill operating record required by s. NR 506.17, Wis. Adm. Code the following information:

44 (a) Special Waste disposal records.

The special waste disposal records for 2017 are provided in **Appendix A, Attachment A-1**.

44 (b) Alternative daily cover records.

The alternative daily cover records for 2017 are provided in **Appendix A, Attachment A-1**. Generators or haulers of alternative daily cover material are identified in the ADC column of the summary table.

3.0 BIOPILE PROCESSING FACILITY

Pursuant to Conditions 9 & 10 of the Wisconsin Department of Natural Resources (WDNR) Plan of Operation for the Solid Waste Processing Facility Approval dated June 23, 1995, for the Advanced Disposal Services Glacier Ridge Landfill, LLC (ADS-GRL) facility # 03792, ADS-GRL is submitting the following Biopile Closure Report.

- 9(a) *Analyses of data from pretreatment and post-treatment samples of each soil pile, assessment of the reduction of contaminant concentrations in the soil, and length of time each soil pile was processed.***

This condition does not apply for the current reporting period. Contaminated soils were stockpiled, but not processed during 2017.

- 9(b) *A tabulation of source and tonnage of soils contributed to each pile, type and cause of the contamination in each soil batch, and concentrations of petroleum contaminants and contaminants other than petroleum contaminants.***

During 2017, a total of 9,062 tons of soils were stockpiled for processing. A summary of the soils accepted for treatment, including source, tonnage, type, and cause of contamination, and contaminant concentrations is provided as **Appendix F, Attachment F-1**.

An estimated 6,000 tons of soil from Biopile #2016 that exceeded the combined DRO/GRO limit of 250 mg/Kg were removed from Biopile #2016 and stockpiled for additional remediation. The 6,000 tons of contaminated soils from Biopile #2016 were combined with the 9,062 tons of soils accepted in 2017 for a total 15,062 tons of soil that will be included in the next Biopile.

- 9(c) *Record of operation of each soil pile, including total tonnage treated, total time of active operation, and any noticeable effects of temperature and seasonal conditions on the time period used for processing.***

This condition does not apply for the current reporting period. Contaminated soils were stockpiled, but not processed during 2017.

- 9(d) ***Description of the disposition of the soil used in the processing operation, whether by disposal or reuse, including any soil sent to an alternative disposal or treatment facility and disposition of any material rejected from the processing operation or subjected to additional treatment.***
- 9(e) ***Tabulation of gas concentration data, tabulation of ambient air data, summary of the amount of time soil air was handled by recycle mode and by direct discharge to the atmosphere, and tabulation of any data from testing air discharged to the carbon canisters and atmosphere.***
- 9(f) ***Service life and disposal of spent carbon from the carbon canister.***
- 9(g) ***Diagram of soil pile grids selected randomly for post treatment sampling and tabulation of post treatment soil testing data.***

Conditions 9 (d) – 9(g) do not apply for the current reporting period. Contaminated soils were stockpiled, but not processed during 2017.

- 9(h) ***Summary of any problems encountered with the soil processing equipment or operation, proposed or implemented solutions to the problems, and any deviations from the approved plan.***

During 2017, the biopile blower failed and was not operational. Contaminated soils were stockpiled, but a biopile was not constructed for processing. The blower will be repaired or replaced during 2018 and a new biopile will be constructed for processing contaminated soils.

- 9(i) ***A description of the source and tonnage of oil dry materials accepted for treatment and a description of the petroleum products which the oil dry materials were applied to.***
- 9(j) ***A summary of any changes to the mechanical equipment, operating controls, or methods of operation due to operator experience and technical advances and any plan modifications necessary to incorporate long term or permanent changes to the plan of operation or approval conditions.***

Conditions 9 (i) and 9(j) do not apply for the current reporting period. Contaminated soils were stockpiled, but not processed during 2017.

- 10 *Every fifth annual report shall assess the bioremediation process in comparison to recent technical literature on aerobic degradation of petroleum hydrocarbons, list the relevant technical references, summarize experience and data from operation of this facility, and propose any changes necessary to incorporate technical advances into the plan of operation.***

The 2016 annual report included an assessment of the bioremediation process compared to new technologies to date. Since the site has not experienced any difficulties operating the soil bioremediation piles, no changes of the plan of operations were recommended at that time. The next assessment of the bioremediation process will be included in the 2021 annual report.